Comments of the Natural Resources Defense Council (NRDC) on the Draft *Climate Action Team Report to the Governor and Legislature*

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I. Introduction

The Natural Resources Defense Council (NRDC), on behalf of our more than 130,000 California members, appreciates the opportunity to offer these comments on the Draft *Climate Action Team Report to the Governor and Legislature* ("CAT Report"). We commend the Climate Action Team members and staff for developing this comprehensive draft report, with opportunities for public input, in an accelerated time frame.

NRDC strongly supports the Governor's greenhouse gas (GHG) reduction targets. The CAT Report demonstrates that these targets are achievable and will provide significant economic and employment benefits for California. Our comments are organized following the structure of the CAT Report.

In summary, NRDC supports the CAT Report and its primary recommendations. Several independent analyses have concluded that meeting the Governor's GHG reduction targets will save California families and businesses billions of dollars and provide tens of thousands of new jobs by 2020. Moreover, these analyses are conservative and do not capture the significant economic opportunities that California can capture by establishing an enforceable cap on emissions and securing a leadership position in the emerging world-wide clean energy market. With such large benefits at stake for California's economy and environment, we urge the Climate Action Team to recommend that the Legislature and Governor work together to establish an *enforceable* cap on GHG emissions, and to authorize the CAT to implement a plan to meet those caps.

II. Comments on Overarching Recommendations

The CAT Report presents four overarching recommendations, which as a package are "intended to encourage investment in technologies that reduce emissions, create jobs, and encourage economic growth:" (i) require reporting of emissions to track progress toward meeting the Governor's targets, (ii) establish a public goods charge (PGC) for transportation to fund key strategies to reduce petroleum dependence, (iii) establish a coordinated investment strategy for state funded programs, and (iv) provide credit to California businesses that take early action to reduce emissions.[1]

[1] CAT Report, p. ii to iii.

NRDC strongly supports these four overarching recommendations. Mandatory reporting, as the CAT Report recognizes, is an essential first step to enable the state to meet the targets. NRDC also supports the public goods charge on transportation fuels. Funding from the small charge on transportation fuels (amounting to less than a dollar per month for the average consumer) could be very effective to provide funding for educating the public on methods to reduce oil use by purchasing efficient vehicles, efficient tires, driving to conserve fuel and properly maintaining their vehicles. Money available from the fund can also support the development of alternative fueling infrastructure and provide incentives for alternative fuel vehicles. Furthermore, a transportation fuels public goods charge can support initiatives that transform communities into ones that are less auto-dependent through efficient land use and smart growth. Our experience with the public goods charge on utility bills shows that by making this very small up-front investment, consumers can benefit from billions of dollars of savings along with reduced GHG emissions.

NRDC also supports the acknowledgement throughout the CAT Report of the need to account for the GHG emissions associated with California's consumption of imported electricity. Half of the emissions from the state's electricity consumption come from imported power, so it is essential that this be fully accounted for.

While the CAT Report as drafted is very strong, we offer a few additional recommendations to make the final report even stronger. First, in Table ES-3, the CAT Report includes a list of additional strategies that will enable the state to meet the GHG reduction targets. The need to pursue these strategies is a key recommendation of the report and we recommend that it be noted as such up-front as part of the report's primary recommendations. Moreover, these strategies will provide enormous benefits to the state, in addition to reducing GHG emissions, by saving billions of dollars, reducing harmful air pollution, conserving our precious water resources, and diversifying our energy supply.

Second, NRDC urges the Climate Action Team to recommend that the Legislature and Governor work together to establish an *enforceable* cap on GHG emissions, and to authorize the CAT to implement a plan to meet those caps. As we discuss in further detail in our comments on the economic analysis below, an enforceable limit on global warming pollution is needed to send a clear market signal and unleash California's world-famous innovative spirit in pursuit of the Governor's targets. This is an essential step to enable California to secure a leadership position in the worldwide clean energy market.

III. Comments on Recommendations for Emission Reduction Strategies

NRDC strongly supports the CAT Report's list of strategies that it recommends be pursued in the next two years, outlined in Table 5-2. In this section, we offer comments and recommendations on certain strategies and their underlying work plans, grouped into the categories of transportation, utilities, and water.

Transportation

NRDC supports the transportation-related strategies outlined in the CAT Report for meeting California's emission reduction targets. Instead of commenting on every measure in depth, however, NRDC provides the following comments on specific strategies.

Alternative Fuels: Ethanol [Air Resources Board]

NRDC strongly supports the use of ethanol in the form of E-85 as an alternative to gasoline. California currently has over 200,000 flexible-fuel vehicles (FFV) that can run on E-85, and the state should encourage the use of E-85 in those vehicles. California should also move aggressively to adopt an E-85 deployment plan and institute programs that will increase the availability of FFVs and E-85 refueling stations in the state. Maximizing the use of E-85 provides two main advantages: it avoids the air quality problems caused by low ethanol blends and it can ultimately lead to larger reductions in greenhouse gas emissions.

Although originally introduced into gasoline specifications to combat ozone formation, ethanol in low-blends (containing 10 percent or less ethanol by volume) can actually contribute to the formation of more pollution. Studies by the California Air Resources Board (CARB) and the Environmental Protection Agency (EPA) have concluded that low ethanol blends (E-5.7 in California) in the current fleet of vehicles increases ground-level ozone pollution by increasing emissions of two precursor pollutants—nitrogen oxides (NOx) and volatile organic compounds (VOCs)—more than it decreases the ozone impact of a third—carbon monoxide (CO).[2, 3] CARB has estimated that current use of low-blend ethanol increases evaporative emissions of ozone-forming pollutants by over 45 tons per day. Permeation emissions from passenger vehicles contribute over 17 tons per day in the South Coast Air Basin alone. These emissions interfere with the State's progress toward attainment of ambient air quality standards.

New vehicle technologies can mitigate some of the emissions associated with low blends, but the risks of ozone pollution will continue in California until the vehicle fleet completely turns over, a process that could take fifteen years or more. Therefore, actions to increase the use of ethanol in the State should focus on E-85.

High-blend ethanol fuels such as E-85 have a lower Reid Vapor Pressure than low-blend fuels and therefore reduce pressure-triggered evaporative emissions. E-85 is burned in vehicles specifically calibrated to run on ethanol blends from E-0 to E-85 which have improved fuel systems that help minimize permeation. They also have the latest oxygen-sensing technology to minimize NOx emissions.

The greenhouse gas benefits of ethanol are maximized when more ethanol is put in the tank. Fueling up with E-85 uses more ethanol per vehicle than limiting the ethanol volume to ten percent. Therefore, creating policies and programs to maximize the sale of E-85-capable vehicles

[2] CARB, "Demonstration That The U.S. Environmental Protection Agency Must Grant California A Waiver From The Federal Reformulated Gasoline Oxygen Mandate On Remand From The U.S. Court Of Appeals For The Ninth Circuit," December 2003.
[3] EPA, "California Oxygen Waiver Decision," EPA420-S-05-005, June 2005.

and fueling stations will ultimately take the larger bite out of greenhouse gas emissions from the transportation sector. An established E-85 infrastructure can also take the maximum advantage of low-carbon ethanol produced from cellulosic feedstocks.

The State Agency Work Plan, submitted in support of the Climate Action Team Report, points out that the use of ethanol produced from cellulosic biomass can more than double greenhouse gas reductions compared to ethanol produced from corn. The Climate Action Team ethanol strategy should promote the use of cellulosic ethanol by funding research, development and demonstration projects for cellulosic ethanol production and distribution.

Alternative Fuels: Biodiesel Blends [Air Resources Board]

We support an effort to phase in biodiesel in low blends. A 2 percent biodiesel mandate in Minnesota was phased in beginning October 1, 2005. California should begin in a similar fashion, by requiring biodiesel to be blended with all ARB diesel at 2 percent with a goal of increasing the percentage of biodiesel as in-state supplies permit, up to 5 percent. Once the B5 goal is met, California should evaluate whether higher blends can be used without negatively impacting air quality or the environment, in general. As supplies permit and as long as no negative environmental or air quality impacts are predicted, California should ramp up biodiesel blends beyond B5. ARB should adopt a fuel standard for biodiesel to address potential environmental concerns.

Alternative Fuels: Non-Petroleum Fuels [Energy Commission]

NRDC supports state efforts to increase the use of alternative fuels in ways that reduce pollutants and petroleum use. Increased alternative fuel use should not interfere with the state's progress toward meeting ambient air quality standards or other environmental and public health requirements. Therefore, efforts by the CEC to increase alternative fuel use should be closely coordinated with the management of environmental protections under CalEPA.

The CEC has been directed by the Governor and Legislature to lead the development of plans to increase the use of alternative fuels. The first report, due to the Governor on March 31, 2006, should be consistent with recommendations made in the June 2007 report due to the Legislature and required by AB 1007 (Pavley, 2005). Both reports should consider the life-cycle impact of alternative fuels and recommend policies that maintain or improve environmental protection and public health while reducing petroleum consumption. Recommendations regarding the increased use of ethanol, for example, should be cognizant of air quality liabilities of low ethanol blends mentioned in the Ethanol section above and account for the potential increased cost of fuel blends that can meet air quality standards. Finally, to maximize the reduction in greenhouse gas emissions, the State should utilize the structure specified in AB 1007 to move low-carbon alternative fuels into the market. For example, the state should investigate setting a California fuels standard predicated on GHG performance and/or other key criteria (e.g., petroleum reduction).

Fuel-Efficient Tires [Energy Commission]

NRDC supports the implementation of California's Replacement Tire Efficiency Program as required by AB 844 (Nation, 2003). NRDC actively participates in the California Energy Commission's tire testing and reporting rulemaking proceedings. NRDC believes that minimum tire efficiency standards are feasible, very cost-effective and will ultimately deliver greater greenhouse gas reductions than those currently estimated by the CEC. California is a leader in replacement tire efficiency policies, and NRDC is encouraged that the California program will spread nationally—laws that mirror AB 844 have already been introduced in the U.S. Congress and the Massachusetts legislature—leading to further greenhouse gas reductions.

Hydrofluorocarbon Reduction Strategies [Air Resources Board]

We support the five measures to reduce HFC emissions listed in the CAT Report (banning the sale of HFCs in small cans; requiring use of low global-warming-potential (GWP) in new vehicular systems; adopting specifications for commercial refrigeration; requiring refrigerant leak tightness on mobile air conditioners and some types of commercial refrigerators and air conditioners; and enforcing the EPA-required HFC recovery during service and repair). Two additional components, however, are necessary to ensure success with this strategy: creating a cradle-to-grave lifecycle tracking system; and funding demonstration projects for low-GWP HFC replacements.

Transport Refrigeration Units, Off-Road Electrification, Port Electrification [Air Resources Board]

NRDC supports strategies to require and encourage investment in electric plug-in infrastructure at truck stops, ports and distribution centers, and other goods-movement facilities.

ARB needs to quickly review opportunities to strengthen existing and planned toxic control measures, including those for TRUs, off-road diesel and ports, in order to take advantage of opportunities to reduce greenhouse gas emissions. The environmental and public health communities have advocated strongly to strengthen several of the air toxic control measures in the past, including the TRU measure already adopted, by including incentives for electrification. Now it is important to carefully evaluate the air toxic control measures planned for board action soon, such as those for marine vessels and ports, to determine additional opportunities for greenhouse gas emission reduction.

Clearly, requirements to provide shore-side power at ports should be a major priority because of the multiple benefits, including potentially large reductions in greenhouse gas emissions, in addition to the huge reductions in particulates and other toxic and criteria pollutants. Included in shore-side power, should be expedited requirements for all terminals at major ports to provide electrical services to new or old cruise ships, tankers, cargo vessels and container ships. Tugboat operators also should be required to plug in vessels while they are waiting between calls.

Another high priority should be including incentives for use of electric, natural gas and hybrid-electric technology in place of conventional diesel technology, especially with regard to

measures affecting equipment at ports and railyards, construction equipment and other off-road sources.

ARB staff also should evaluate possible greenhouse gas emission benefits from expanding electrification requirements for TRUs. The electrification strategies listed in the Table 2 summaries are important measures to be evaluated, e.g. retrofitting existing transportation refrigeration units with electric standby; requiring electrical hook-ups for transport refrigeration units at cold storage facilities including grocery stores, warehouses, distribution centers, port terminals and intermodal (i.e. railyards) terminals or yards.

Truck stop electrification, which allows truckers to plug in vehicles to operate necessary systems without idling the engine, can provide energy for heating, ventilation, and air conditioning directly to the sleeper compartment. According to ARB, the typical long-haul sleeper truck idles for 2,100 hours per year and consumes 0.4 to 1.6 gallons per hour of fuel depending on engine size, engine speed, heating, air conditioning and electrical loads. ARB estimates that in 2005 the diesel fuel consumption due to idling of California registered sleeper trucks is approximately 162,000 gallons per day statewide. Statewide emissions from extended idling of both in-state and out-of-state sleeper trucks in 2010 are estimated at 53 tpd NOx and 0.73 tpd particulates.[4]

According to North Carolina's Department of Environment and Natural Resources, an electrified truck stop with 50 parking spaces is expected to save 263,000 gallons of fuel annually, and prevent 2,700 tons of carbon dioxide, 35 tons of nitrogen oxides, 15 tons of carbon monoxide, 1.8 tons of hydrocarbons and 1 ton of particulate emissions each year.

An idling truck wastes about 0.8 gallons of fuel per hour, which translates into about $1.75 wasted every hour (based upon May, 2005 retail cost of highway diesel fuel of $2.1841/gallon). Combined with the trucking industry's estimate that maintenance for long duration idling costs about $1.13 per day, truck idling is an expensive practice. Extending the 5-minute idling limit to trucks equipped with sleeper cabs and adding automatic shutoffs to new trucks will reduce harmful diesel exhaust emissions as well as global warming pollution, saving diesel fuel, improving public health and resulting in overall economic savings directly to truck owners and operators.

Heavy-Duty Vehicle Emissions Reduction Measures [Air Resources Board]

Tractor trailers consume about two-thirds of truck fuel. The fuel economy for these vehicles was the same in 2001 as it was in 1980. Upcoming emissions standards (phased in between 2007 and 2010) may lead to a drop in fuel economy, as some of the pollution controls may need fuel to function.

The fuel economy for new tractor trailers could be raised by 29 percent in 2008 and 58 percent in 2015, while providing a net savings for the owner based on incremental cost and lifetime fuel

[4] California Air Resources Board ISOR, Notice of Public Hearing to Consider Requirements to Reduce Idling Emissions from New and In-Use Trucks, Beginning in 2008. September 1, 2005. Scheduled for Consideration: October 20-21, 2005.

savings[5]. Hybrid technologies could almost double the fuel economy for Class 3-5 trucks and raise Class 6-7 fuel economy by 71 percent in city driving. For many of these vehicles, hybridization could bring modest lifetime savings in the near future and savings of several thousand dollars for vehicles purchased in 2015[6].

- ARB should commit to enforcing the anti-idling regulations to the fullest extent possible (see earlier comments on idling measures).
- ARB should promote aggressive GHG reduction technologies, particularly for tractor trailers. Such technologies include improved aerodynamics, reduced rolling resistance, improved transmissions, advanced auxiliary power units, reduction in vehicle mass and engine improvements. In addition, ARB should promote hybridization of HDV with stop and go drive cycles, particularly where cost-effective fuel savings can be achieved.
- In areas of high truck traffic, ARB should actively engage communities in developing plans to reduce pollution, congestion and other negative impacts from HDV.
- Incentives should be provided to encourage the movement of goods using the most efficient mode for the majority of transport required.

Utilities

NRDC strongly supports the strategies for additional investor-owned utility (IOU) and municipal utility energy efficiency programs, as well as electricity sector carbon policies. In particular, NRDC strongly supports the work plan to accelerate the municipal utilities' energy efficiency programs. While the IOUs and the CPUC are on track to meet their portion of the state's energy saving target, the publicly-owned utilities, which provide about one-quarter of the state's power, are falling far short. Publicly-owned utilities must accelerate their efficiency programs by two to three fold in order to meet their share of the state's energy saving target and to at least proportionately match the savings expected to be achieved by the IOUs. This strategy will contribute substantial GHG reductions as well as an estimated $3 billion in net benefits over the next decade.

The CPUC recently issued a draft decision to continue the implementation process for the IOU electricity sector carbon policy identified in the CAT Report. The draft decision, if adopted, would set up a process to develop the details of this strategy; since it will likely take another year to work through those details, it is important that the process move forward so that it can begin delivering savings by 2010 as called for in the CAT Report. NRDC commends the Climate Action Team for moving forward expeditiously to realize the plan that has been outlined in the report.

NRDC also supports continued upgrades to the state's building and appliance efficiency standards to meet the GHG reduction targets and to provide large economic benefits. Although the CAT Report does not currently have estimates for the GHG savings associated with these strategies, we expect them to be large. Historically the building and appliance efficiency

[5] "Energy Savings through Increased Fuel Economy for Heavy-Duty Trucks," American Council for an Energy-Efficient Economy, February, 2004.
[6] Ibid.

standards have contributed approximately half of all the energy savings California has achieved through efficiency codes and programs.

Water

We are pleased that the draft Climate Action Team report recognizes that water use efficiency can play a role in helping California reduce its greenhouse gas emissions. California has a uniquely energy intensive water supply due to the practice of conveying water from Northern California to Southern California, which involves lifting that water 2000 feet over the Tehachapi Mountains, the highest lift of any water system in the world. Reducing Southern California's reliance on imported water can thus save tremendous amounts of energy and correspondingly reduce CO2 emissions.

Furthermore, the energy required to treat, heat and circulate water to put it to use requires as much energy as conveying that water, so reducing water use is a more effective emission reduction strategy than simply changing the mix of water sources, or the timing of water use. Pursuing water use efficiency can be a highly cost-effective way to save energy and achieve corresponding emission reductions. We support the CEC's efforts to refine our understanding of the relationship between water and energy use in the state, and look forward to the results of its research project in the next few months.[7]

We disagree with the CAT Report proposal to construct additional storage as a means to reduce emissions.

There are several reasons for this position. First, except for the proposed raise of Shasta Dam, all of the surface storage facilities currently under consideration pursuant to the CALFED record of decision are net energy consumers. That is, the energy that would be generated by these facilities would be less than the energy needed to pump water into these storage facilities and the amount of electricity generation that would be lost at upstream facilities that these projects would inundate.

Second, use of the water supply generated by any new storage facility, particularly in an urban setting, would further increase both total and peak energy demand, thus increasing carbon emissions. While advocates of storage projects emphasize the load shifting opportunities that may be created by pumped storage, they typically ignore the energy impacts of the overall increase in water use and associated energy use that is likely to accompany the construction of such projects. Because end use typically represents half of the energy consumption associated with water use, even with load shifting opportunities, this increased water and energy use may have the effect of increasing peak demand. And increased energy use would reduce the effectiveness of multi-purpose water supply and hydropower dams as part of a climate control strategy.

Third, such storage facilities would increase California's dependence on the fragile Delta system. By increasing water diversions from this physically and biologically fragile system, such a policy

[7] California Energy Commission. *California's Water-Energy Relationship* Final Staff Report, Publication #CEC-700-2005-011-SF, November 2005, p.8.

could further harm the Delta and expose the California economy to increased risk if there were a catastrophic failure of Delta levees. From a water supply perspective, an effective climate strategy should reduce California's dependence on the Delta.

Fourth, it is well known that the twin effects of increased storm intensity and decreased snowpack are likely to decrease the water supply yield and hydropower generation of existing dams. However, the impacts of these global warming effects on potential new dams are less well studied. Our initial analysis suggests that it is likely that, in many cases, these effects will make new surface storage facilities (facilities that are already far less cost-effective than other water supply alternatives) even more expensive. On the other hand, from both a water and energy perspective, when one considers the likely effects of global warming, water conservation will likely be even more cost-effective in the future. For example, maintaining today's landscapes in a warmer climate will likely require more water in the future and, therefore, more embedded energy. Therefore, strategies to design and install landscapes that require less water, and to improve the efficiency of new and existing irrigation systems will yield even greater benefits in a warmer future climate.

NRDC recommends that water managers and energy planners evaluate carefully the likely impact of global warming on the tools available to meet future water and energy needs. Our initial analysis of this issue suggests to us that other water management tools are likely to be more effective elements of a global warming strategy than new surface storage facilities.

The draft CAT Report estimates for the potential emissions reductions from water use efficiency are too low.

NRDC commends the CAT for inclusion of water management as an emission reduction measure (Table 5-2, "Water Use Efficiency," Resources Agency); however, the draft CAT Report estimates for the potential emissions reductions from water use efficiency are too low.

The discussion of water use efficiency plans in the California Water Plan Update on page 51 gives plans for potential urban conservation savings ranging from 1.1 to 2.3 million acre feet (MAF) per year, and agricultural savings ranging from 0.5 to 2.0 MAF per year by 2030, for a total water conservation potential of up to 4.3 MAF per year. However, the DWR workplan assumes that the state will achieve only 2 MAF of water conservation by 2030 despite the potential range given of up to 4.3 MAF.[8] The conversion given on page 50 of the CAT Report states that providing the 44 MAF of water used annually in California produces 44 million tons of CO2. Therefore, full implementation of water conservation programs would yield up to 4.3 million tons of reduced CO2 emissions annually by 2030 (on the order of 0.6 MMTCO2 by 2010, and 2.8 MMTCO2 by 2020). Yet the CAT Report estimates CO2 reductions of only 0.4 million tons by 2010 and 1.2 million tons by 2020. This would reflect a very slow implementation effort, foregoing valuable cost-effective savings.

The estimates of water conservation potential in the report are too low.

[8] Climate Action Team, *Draft State Agency Work Plans*, December 8, 2005, p.1 10.

Estimates of statewide water conservation potential indicate the potential could be even higher than 4.3 MAF. The CAT Report acknowledges that the California Bay-Delta Authority offered a higher estimate of 3 MAF per year of urban conservation potential, for a total of 5 MAF per year potential statewide (which would result in roughly 1 MMTCO2 and 3 MMTCO2 reductions by 2010 and 2020, respectively). A recently released report by the Pacific Institute offers a high efficiency scenario that reflects savings of 8.5 MAF,[9] based on existing technologies. At this level of conservation, CO2 reductions could potentially reach 1.7 MMTCO2 by 2010, and 5.1 MMTCO2 by 2020. Incentive driven advances in technology could drive these levels even higher.

Another reason that the estimates are low is that the report reflects an unexplained delay in program implementation. Table 5.1 indicates that water conservation programs will begin in 2008. As the potential estimates indicate that the savings could be achieved using existing technologies, many of these programs could begin immediately and water savings in the CAT Report should be increased to reflect a starting date of 2006.

Energy savings and associated emission reductions would be even higher if these water use efficiency efforts focused on the most energy intensive sources of water supply. For example, the average net energy requirement to move State Water Project (SWP) water to Southern California is 3,000 kWh/AF. Decreasing SWP imports by 800,000 AF would thus save 2.4 billion kWh (800,000 x 3000) in conveyance energy alone. This translates into a reduction of 1.2 million tons of CO2, based on the average California grid mix. Our analysis in NRDC's report *Energy Down the Drain* showed that accounting for end use energy more than doubles this number. For example, the total energy intensity of SWP water use in San Diego is over 7,000 kWh/AF. Thus, the emission reduction potential from reducing water use by 800,000 acre feet in Southern California alone would reduce CO2 emissions by 2.4 million tons, more than double the estimate given in the CAT for the entire state. If conservation levels closer to 5 million acre-feet were achieved, the likely emission reductions could be many times higher times higher than reflected in the draft CAT Report.

We urge the Climate Action Team to revise the estimates of emission reduction potential from water use efficiency to reflect a more ambitious and targeted program.

To achieve this increased potential, we recommend the following:

- ***Target savings of at least 1 MMTCO2 and 3 MMTCO2 in 2010 and 2020, respectively, for the Water Use Efficiency strategy.*** Savings could potentially reach 1.7 MMTCO2 and 5.1 MMTCO2 under a high efficiency scenario.

- ***Increase investment in water conservation.*** Given the priority of reducing emissions, and recent CEC findings that water efficiency investments may be the most cost-effective way of achieving energy savings, the state should be planning to significantly increase the current level of investment in water use efficiency. The state should consider a public

[9] Peter Glieck, et al., *California Water 2030: An Efficient Future*. 2005. (Pacific Institute for Studies in Development,En vironment and Security,O akland, California.

goods charge to fund water efficiency programs similar to the charge that has funded energy efficiency programs.

- ***Focus efficiency investments in areas with the most energy-intensive water supply.*** As noted in the draft CAT Report, the same conservation measure can save dramatically more energy in areas with energy-intensive water supplies. Conservation programs should be targeted to achieve maximum energy savings and emission reductions.

- ***Employ additional tools beyond those listed in the report to achieve efficiency savings.*** DWR's work plan focuses on accelerating implementation of Best Management Practices (for urban water use) and Efficient Water Management Practices (for agricultural water use). These efforts should be expanded to include better agricultural water measurement, tiered pricing, elimination of water subsidies, product efficiency standards and labeling, market transformation programs, etc.

- ***Pursue full implementation of the recommendations of the AB 2717 Landscape Task Force.***[10] Landscape water use drives peak seasonal demand for urban water agencies. This peak use coincides with peak season demands experienced by energy utilities; especially in hot summer areas like Southern California. So landscape water use is burdening the water and power delivery systems at the worst possible time. Landscape irrigation is the largest component of urban water use, comprising on average 40% of urban use, and up to 60% in hot summer areas such as Southern California. This trend is likely to continue since much of the state's anticipated population growth is forecast to occur in hot inland areas where landscape irrigation comprises more than half of urban water use. The AB2717 Task Force recommendations include conservation rates, efficiency standards and product labeling, smart irrigation controllers, dedicated landscape meters, upgrading the California Irrigation Management Information System (CIMIS) and reducing the amount of water budgeted to landscapes in new construction.

- ***Incorporate energy analysis into Urban Water Management Plans.*** Most on-the-ground water supply decisions are made locally and are reflected in Urban Water Management Plans. For this reason, they are the appropriate vehicles for a more complete resource accounting. The legislature should pass again and the Governor should sign SB 820 which would require water suppliers to consider the energy implications of their water management options in Urban Water Management Plans, and to factor in related energy costs and benefits when considering water conservation measures or water supply projects.

- ***Encourage energy utilities to invest in water use efficiency.*** The CPUC and CEC should develop a methodology that would enable energy utilities to "count" the energy saved through investments in water use efficiency. This work should be part of the CPUC's plan to consider the issue of counting embedded energy savings associated with energy efficiency towards energy savings goals and portfolio performance. (CPUC D.05-

[10] *Water Smart Landscapes for California: AB 2717 Landscape Task Force Findings Recommendations and Actions* (California Urban Water Conservation Council: December 2005)

09-043, Order 24) As noted in the June 2005 draft of the CEC's Staff Report on California's Water-Energy Relationship, "[The current] treatment of water efficiency programs, and the related effect on energy resource planning, is inconsistent with the state's Energy Action Plan and fails to ensure that all cost-effective energy efficiency will be implemented as first in the loading order of actions to be under the Energy Action Plan."

- ***Encourage DWR and water agencies to prepare a water supply self-reliance strategy for Southern California.*** The nearly-final State Water Plan suggests that Southern California can significantly reduce its reliance on imported water supplies. Given the energy intensity of water imported by the State Water Project to Southern California, such an effort could produce significant reductions in energy consumption and greenhouse gas emissions, and could provide other benefits as well. Such an effort could reduce the vulnerability of the Southern California economy to an interruption in Delta water supplies, as a result of earthquakes, floods or environmental requirements. It could provide local Southern California environmental benefits, such as improved coastal water quality, as well as benefits for the Bay-Delta estuary. Thus, increasing the water supply self-reliance of Southern California could provide remarkably broad benefits in a cost-effective manner. Water conservation would likely be the most important tool; however, such an effort could also include groundwater clean up, wastewater reclamation and stormwater capture.

Finally, we suggest that the report should clarify whether emission reductions are annual or cumulative, and should further clarify whether end use energy has been included when calculating emission reduction potential.

IV. Comments on Cap and Trade Options

The CAT Report includes a discussion of cap and trade options for California. NRDC supports an enforceable cap on GHG emissions for California, including the emissions associated with imported power. We agree with the CAT Report's support for "the use of multiple implementation options designed to support one another and provide the greatest possible emission reductions for the least cost." (p. 91) A combination of programmatic strategies and an enforceable cap on emissions will to provide significant emission reductions and economic benefits.

The CAT Report has done a good job of describing the key design issues that must be resolved to establish an effective enforceable cap. NRDC supports the "hybrid" approach described in the CAT Report that would include an emissions cap on the electric load-serving entities and fossil-carbon based fuels (primarily natural gas and petroleum). (p. 82)

However, the report's discussion of cost containment mechanisms is incomplete. The report discusses a "safety valve" or a price cap, but not other options for containing costs. All cost-containment mechanisms fall somewhere along the spectrum between providing total certainty about emission reductions and total certainty about costs. For example, a tax on emissions

would provide total certainty about costs but no certainty about emissions, whereas a pure cap would provide total certainty about emission reductions but no certainty about costs. Another cost containment mechanism known as a "circuit breaker" would freeze the level of the emissions cap (i.e. prevent a continuing decline of the cap) if the price of allowances exceeded a pre-determined benchmark, thereby providing certainty that emissions will not increase while also providing some cost certainty. Another mechanism adopted by the Regional Greenhouse Gas Initiative uses price triggers to expand the availability of offsets. A recent analysis issued by the UC Berkeley California Climate Change Center argues strongly against the use of a safety valve.[11] All of these mechanisms are at different points along a spectrum, and the trade-offs that they offer between emissions reductions and cost certainty should be carefully considered before a mechanism is selected.

A fundamental environmental problem with the all of the above-mentioned options is that they break the cap without any "make-up" of the excess emissions. Another option is to set a long-term declining emission cap and allow both banking and borrowing of allowances. While banking is a standard feature of cap and trade programs, borrowing is impractical without establishing the long-term cap. With such a long-term cap, however, borrowing and banking together offer another option for cost-control. Borrowing could be an effective way to address spikes in costs. Carbon control costs could spike for a variety of temporary reasons even if long-run costs are expected to be modest. Allowing firms to borrow future allowances if prices exceed a trigger point, and to repay those allowances with interest, would allow firms to "get over the hump" of such spikes. Such an option would create a market mechanism to allow individual firms, and the market as a whole, to determine the optimal schedule for meeting the cumulative emissions budget provided by the declining cap schedule.

V. Comments on Economic Analysis

The CAT Report's economic analysis demonstrates that achieving the targets will save California families and businesses billions of dollars and provide tens of thousands of new jobs by 2020. The benefits of meeting the Governor's targets was also confirmed by two independent economic analyses released by the Center for Clean Air Policy and UC Berkeley. However, we believe that the CAT Report's economic analysis is conservative and that it significantly under-estimates the benefits to California for several reasons.

First, by looking at the benefits and costs using a snapshot in time at 2010 and 2020, the analysis appears to have significantly under-estimated the net benefits from energy efficiency programs. These programs generally require up-front investments, and pay enormous dividends over time (usually more than a decade on average). The analysis therefore appears to be counting the full cost of the efficiency measures, but only a fraction of the savings. Together, the municipal utility and IOU efficiency programs only account for approximately $3.4 billion in net benefits

[11] Burtraw, D., A. Farrell, L. Goulder, C. Peterman, "Chapter 5: Lessons for a Cap-and-Trade Program," *Managing Greenhouse Gas Emissions in California,* January 23, 2006, p. 5-39.

in 2020 in the report, but these investments will provide approximately $12 billion in net benefits when all the savings associated with the included costs are accounted for.[12]

Second, the analysis of building and appliance efficiency standards already underway excludes the economic savings from natural gas. With Californians facing record high gas bills this winter and gas price forecasts increasing, this again makes the analysis highly conservative. And the savings from future upgrades to the building and appliance standards are not estimated is the report. Since these have historically contributed about half the total savings from energy efficiency, they should add billions of dollars in net benefits.

Third, the net benefits of the vehicle climate change standards appears to have been calculated assuming that gasoline prices were $1.74 per gallon. However, the CAT Report's economic analysis forecasts gas prices at $2.00 and $2.07 per gallon in 2010 and 2020, respectively. Therefore it appears that the benefits associated with these standards are significantly conservative.

Finally, most of the strategies identified in the CAT Report provide significant additional benefits, beyond fuel savings, that have not been quantified, for example, the sizeable benefits of cleaner air and improved public health.

As a result, NRDC believes that the CAT Report's economic analysis is conservative. And yet it already shows large economic benefits, so California can feel confident that moving forward is the right thing to do.

An Enforceable Cap on GHG Emissions Will Enable California to Lead the Emerging Clean Energy Market

While it is important to focus on the detailed costs and benefits of all the strategies, we may also be "missing the forest for the trees." California is watching *the economic opportunity of a lifetime* unfold right in front of our eyes. Nearly every developed country in the world has committed to reduce its GHG emissions. The vast majority of emissions come from burning fossil fuels, so reducing emissions fundamentally requires developing a new clean energy economy. Energy is a $700 billion a year market in the U.S. alone, and the world spends *trillions* every year.

The race for this massive prize has already started. The opening shot was fired nearly a year ago when the Kyoto protocol entered into force. The good news is that California has a modest head start thanks to decades of progressive energy and environmental policy. The bad news is that we have not even decided yet if we are going to join the race, while the rest of the world has their sights set firmly on the finish line. And the longer we wait, the more countries will pass us by, and California will be left buying *their* technologies to power *our* future.

California's prosperity depends on continuing innovation. A recent study by the Public Policy Institute of California analyzed the primary drivers of employment change in the state over ten

[12] M. Rufo and F. Coito, "California's Secret Energy Surplus: The Potential for Energy Efficiency," Xenergy Inc., for the Energy Foundation and the Hewlett Foundation, 2002 (www.energyfoundation.org/energyseries.cfm).

years and found that the net effect of business relocations on employment is negligible.[13] California is not going to grow and prosper by luring businesses to relocate into the state. Instead, employment growth stems primarily from the creation of *new* businesses. And creating an environment that encourages new businesses requires policies that stimulate innovation.

California knows how to lead a technology revolution. But few new clean technology companies will be founded in California if their primary market is half way around the world. If the state is going to lead the clean energy revolution, the market needs to begin here at home. To create that market, California needs an *enforceable* limit on global warming pollution. It will unleash our world-famous innovative spirit, and if we act soon, California can lead the worldwide clean energy market, and it will drive the state's prosperity for decades to come.

VI. Impacts on Low Income and Minority Communities

No trading program, nor other implementation option, whether market-based, voluntary or regulatory, should result in pollution hotspots, especially for other pollutants (CO, NOx, SOx, PM and toxics) which are dangerous to human or environmental health, in any California community. Spatial redistribution of contaminants poses serious environmental justice concerns as state agencies have historically done too little to prevent the accumulation of contaminants in lower income communities of color. Protections must be included to prevent an increase in localized emissions of regulated pollutants or toxic contaminants. A number of such protections are available, including cumulative impact analysis prior to trading in heavily-burdened communities; technology-based requirements as condition precedent to trading; overall reduction or no-net-increase of locally-problematic attendant pollutants; prioritization of climate change emission reduction strategies that will alleviate adverse effects on lower income communities of color; third-party compliance certification and mandatory enforcement; identifiable criteria, providing protection to lower income communities of color, to guide regulatory efforts; and commitment of resources to mitigate the adverse health and socio-economic impacts of climate change. In addition, State agencies must continue their efforts to work with lower income communities of color, and community-based organizations and environmental justice organizations throughout the entire process.

VII. Conclusion

The CAT Report presents a plan to meet the Governor's aggressive GHG reduction targets while yielding significant economic benefits for California. To enable the state to secure a leadership position in the emerging clean technology market, NRDC urges the Climate Action Team to recommend that the Legislature and Governor work together to establish an *enforceable* cap on GHG emissions, and to authorize the CAT to implement a plan to meet those caps.

NRDC commends the Climate Action Team for the admirable effort to date in developing the comprehensive draft report, and we encourage the Climate Action Team to deliver a final report

[13] Neumark, D., J. Zhang, and B. Wall, "Are Businesses Fleeing the State? Interstate Business Relocation and Employment Change in California," *California Economic Policy*, Vol. 1 Ed. 4, October 2005.

to the Governor and Legislature expeditiously. As the Governor said in issuing his call for GHG reductions: "The time for action is now." The CAT Report demonstrates that meeting the Governor's targets will provide substantial benefits to the state. It will take more time to resolve all the implementation issues, but there is no time to waste. A further public process should begin as soon as possible to ensure that California will meet the Governor's GHG reduction targets.